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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,582	12/21/2001	Dong Ho Kang	041501-5484	2488
9629	7590	04/07/2005	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004				NGO, HUYEN LE
ART UNIT		PAPER NUMBER		
2871				

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/024,582	KANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Julie-Huyen L. Ngo	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-3, 5-7 and 9 is/are rejected.
- 7) Claim(s) 4 and 8 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: ____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: ____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

**DETAILED ACTION*****Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 3, 5 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Ikeda et al (US 6671025 B1).

**Claims 1 and 5:**

Ikeda et al teach (e.g., figures 3, 5 and 12-14) forming a LCD device comprising:

- a TFT substrate 30 including a plurality of pixels, gate lines 33b and data lines 33a;

- a color filter substrate 50 that is spaced apart from the TFT substrate
- a plurality of column spacers 55 at black matrix 52 selectively formed on the color filter substrate 50, the column spacers having a semi-spherically shaped end portion adjacent to the TFT substrate, which the plurality of column spacers are not formed, and disposed at every two pixel along a column direction;
- a liquid crystal layer 49 injected between the TFT substrate and the color filter substrate.

wherein

- each of the plurality of column spacers are separated from one another and are disposed at intersections of the gate and data lines.

Claim 3:

- each of the plurality of column spacers has a contact area region contacting the substrate, which the column spacers are formed thereon, the contact region having a square shape.

Claim 9:

- the semi-spherically shaped end portion has a contact area contacting the other substrate, which the column spacers are not formed on, the contact area having a dot shape.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al as applied to claims 1 and 5 above, and further in view of Miyazaki et al (US 5978061) and Yanagawa et al (US 6583846 B1).

Ikeda fails to disclose the features of claims 2 and 6.

Yanagawa et al teach (figure 28A) distributing spacers 10 uniformly over the entire display area, and each of the spacers 10 is allotted to a group comprising the equal number of adjacent pixels, e.g., at every two pixels. The number of the spacers 10 disposed in the display area is reduced so as to reduce the orientation defects caused by the spacers 10. This prevents occurrence of unintentional contrast produced by light leakage, especially in displaying of a black image. However, It is well known in the art for one column spacer be provided for every two pixels (claim 2), as evidenced by Miyazaki et al. (figure 20), and a plurality of spacers are arranged in diamond shapes (claim 6), as evidenced by Yanagawa et al (figure 28A).

Therefore, it would have been obvious for one of ordinary skill in the art to reduce the spacers in Ikeda et al LCD device with one spacer for every two pixels along a column direction (claim 2) or in diamond shapes (claim 6) for

improving the display quality of Ikeda et al. LCD, as taught by Miyazaki et al. or Yanagawa et al, respectively.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. in view of Miyazaki et al. and Yanagawa et al as applied to claims 2 and 6 above, and further in view of Inou (US6078274A).

Ikeda in view of Miyazaki et al. and Yanagawa fail to disclose the feature recited in claim 7.

Inou teaches forming a pitch of pixel being 200 $\mu$ m for manipulating the luminosity, therefore, the pitch of spacers as Ikeda et al (Fig. 14) disclosed should be 400 $\mu$ m, which is in a range of 279-600 $\mu$ m.

Therefore, it would have been obvious for one of ordinary skill in the art to reduce the spacers in Ikeda et al LCD device with a pitch of pixel being 200 $\mu$ m for manipulating the luminosity, therefore, the pitch of spacers as Ikeda et al (Fig. 14) disclosed should be 400 $\mu$ m, which is in a range of 279-600 $\mu$ m.

### ***Allowable Subject Matter***

Claims 4 and 8 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 4 and 8 would be allowable because there is no prior art of record that teaches a LCD comprise:

Each of a plurality of spacers has a contact region contacting the color filter substrate; the contact region has a square shape with one protrusion extending from each of four sides of the square shape.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (571) 272-2295. The Examiner can normally be reached on T-Friday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (571) 272-2293.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

April 5, 2005

  
*Julie -Huyen L. Ngo*  
*Patent Examiner*  
Art Unit 2871